

Remarks

This is filed in response to the Office Actions mailed July 3, 2003 and April 28, 2004. As noted, the section entitled "Amendments to the Claims," above, replaces the same-named section submitted in the Reply & Amendment filed November 3, 2003. The remarks that follow duplicate those filed.

The former Office Action rejects the pending claims as allegedly anticipated by Real-Time Innovation, Inc.'s ControlShell User's Manual, Ver. 5.1, published June 1996. For the reasons below, that publication fails to teach or suggest the claimed invention.

This application is generally directed to methods and apparatus for configuring control systems. As noted in the Summary of the Invention, these employ objects (or other data and/or programming constructs) that inherit parameters from their ancestors. Parameters define characteristics of the objects (and the process control elements or entities they represent) such as inputs, outputs, alarm limits, control functions and display characteristics, among others. See, USSN 09/448,374, at p. 6. Changes to an ancestor during configuration are effective as to its descendant objects. *Id.*, at paragraph bridging pages 5–6. Unlike the prior art, those changes are made effective without recompilation. *Id.* In this regard, their parameters are analogous to data — not code.

The pending claims capture one or more of these aspects. Thus, by way of example, independent claim 1 recites an apparatus for configuring a control system which comprises a plurality of objects, each of which represents an entity, where each object is associated with one or more parameters, each pertaining to a characteristic of the entity represented by the object. At least one of the objects, a so-called "descendant," is defined as a descendant of another object, a so-called "ancestor," and is associated with one or more parameters of that ancestor. A change during configuration — e.g., during that phase when "an engineer or operator . . . model[s] a device, process or system and the desired strategy for controlling it" (*id.*, at p. 4) — to a parameter of an ancestor object is effective as to a descendant object with which that parameter is associated. As noted in the amendment, this is so without recompilation of those objects.

The remaining independent claims parallel claim 1 in regards relevant hereto, reciting other aspects of the claimed system. Those claims, too, are amended to clarify that a change during configuration are effective as to the descendant object without recompilation.

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Such is not the case with the sole cited reference, the ControlShell User's Manual, which represents conventional prior art in regard to objects — to wit, that changes to them necessitate recompilation. Thus, for example, referring to the introduction to Chapter 1 of that document, the authors describe *ControlShell* as a framework for software development. Section 1.1 of that chapter describes numerous goals of *ControlShell* in terms of code ("software") modularization and reuse. This is repeated, for example, in the overview which opens Chapter 2 of the document. The fundamental requisite of recompilation whenever one of these modules is changed is evident in Chapter 5, the focus of which is a facility that generates source code files: *see*, for example, the discussion at p. 5-19. This culminates in the discussion, at Section 5.4.2, in which the authors suggest a way of minimizing the number of (re)compiles, by limiting them to files that have changed.

The claimed invention overcomes this, reciting methods and apparatus for configuring a control system with objects that inherit parameters from one another, but which do not require recompilation in order to carry a change from ancestor object to descendant object. For this reason, neither claim 1 nor the other independent claims are anticipated by the sole cited reference. This is likewise true of the dependent claims which recite further limitations on the methods and apparatus of the independent claims.

In view of the amendments herein and remarks above, the Applicants respectfully request that the rejection be reconsidered and withdrawn so that this application can pass forward to issuance.

Respectfully submitted,  
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6/28/04

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